

Application No. 10/784,932
Reply to Office Action of July 15, 2005

IN THE DRAWINGS

The attached sheets of drawings include changes to Figs. 2 and 9. These sheets, which includes Figs. 2 and 9, replaces the original sheets including Figs. 2 and 9.

Attachment: Replacement Sheets (2)

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-15 are pending in the present application, Claims 5, 8, 9, 12, 14, and 15 having been amended without the introduction of new matter.

In the outstanding Office Action, the drawings were objected to; Claims 5, 8, 12, 14, and 15 were rejected under 35 U.S.C. §112, second paragraph; Claims 5, 8, and 15 were rejected under 35 U.S.C. §101; Claims 9, 12, 14, and 15 were rejected under 35 U.S.C. §102(b) as anticipated by Nakajima et al. (U.S. Patent Publication No. 2002/0139416, hereinafter Nakajima); Claims 1, 2, 4, 5, 10, and 11 were rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as unpatentable over Nakajima; and Claims 3, 6-9, and 12-15 were rejected under 35 U.S.C. §103(a) as unpatentable over Nakajima.

With respect to the objection to the drawings, Figs. 2 and 9 are amended to correct the informalities identified in the outstanding Office Action.

With respect to the rejection of Claims 5, 8, and 15 under 35 U.S.C. §112, second paragraph and 35 U.S.C. §101, Applicants respectfully submit that the amendments to Claims 5, 8, and 15 overcome these grounds of rejection. Particularly, Claims 5, 8, and 15 are amended to recite a step. Accordingly, this ground for rejection is believed to have been overcome. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work with the Examiner in a joint effort to derive mutually satisfactory claim language.

With respect to the rejection of Claims 12 and 14 under 35 U.S.C. §112, second paragraph, Claims 12 and 14 are amended to overcome this ground of rejection.

With respect to the rejection of Claim 9 under 35 U.S.C. §102(b) and §103(a),

Applicants respectfully traverse the rejection. Claim 9 is amended to recite *inter alia*, “the multi-element polycrystal includes polycrystalline grains each being formed of a crystallographic texture having discrete regions dispersed in a matrix.” This language previously appeared in the preamble of Claim 9, and thus no new matter is added. Applicants respectfully submit that Nakajima does not describe or suggest at least this element of Claim 9.

Nakajima describes $\text{Si}_{1-x}\text{Ge}_x$ ($0 < X < 1$) wherein the SiGe polycrystal has a crystallographic texture in which the microscopic distribution of elements is non-uniform. The drawings in Nakajima show that SiGe polycrystal having a non-uniform microscopic distribution of $\text{Si}_{0.5}\text{Ge}_{0.5}$ ($X=0.5$) is dependent on a cooling rate, and show crystallographic textures having different concentration distribution of an element Si.¹

On the other hand, crystal grains of the claimed invention, which for a non-limiting embodiment are SiGe crystal grains, comprise a crystallographic texture having a Si rich matrix and a plurality of Ge rich discrete regions dispersed in the matrix. For example, see Figs. 1 and 2 of the present application. Applicants note that Figs. 1 and 2 of the present application are not shown in Nakajima.

Nakajima discloses a crystallographic texture in which the microscopic distribution of SiGe is non-uniform. Nakajima does not disclose or suggest that “the multi-element polycrystal includes polycrystalline grains each being formed of a crystallographic texture having discrete regions dispersed in a matrix” of Claim 9.² Moreover, a person of ordinary skill in the art cannot conceive the above-noted element of Claim 9 from the drawings in Nakajima, which only show the non-uniform microscopic distribution of elements.

¹ Figs. 1A-1D, 2A-D of Nakajima, and paragraph [0034].

² Emphasis added.

Furthermore, with respect to the rejections based on 35 U.S.C. §103, the Examiner provides no explanation or motivation as to why a person of ordinary skill in the art would modify Nakajima in order arrive at the claimed invention. Thus, Applicants respectfully submit that the rejections based on 35 U.S.C. §103(a) are defective and respectfully request that they be withdrawn.

Furthermore, the outstanding Office Action does not cite to any evidence in the record that a polycrystal having a non-uniform microscopic distribution of elements as disclosed in Nakajima must be interpreted by those of ordinary skill in the art to teach that “the multi-element polycrystal includes polycrystalline grains each being formed of a crystallographic texture having discrete regions dispersed in a matrix.” The outstanding Office Action again errs by presenting a mere subjective conclusion that this is the meaning. Accordingly, the examiner is called upon, under 37 CFR §1.104(d)(2), to supply his affidavit, including his credential to testify as one of ordinary skill in the art, setting forth that the disclosure at paragraphs [0009], [0022]-[0028], [0033], and [0034] of Nakajima would be interpreted by persons of ordinary skill in the art as only suggesting polycrystalline grains each being formed of a crystallographic texture having discrete regions dispersed in a matrix.

In this regard, it is again noted that substitution of an improper subjective conclusion as to knowledge in the art for concrete evidence of such knowledge relative to a core factual finding required for a determination of patentability is clearly improper. See In re Zurko, 59 USPQ2d 1693, 1697-98 (Fed. Cir. 2001) as follows:

Finally, the deficiencies of the cited references cannot be remedied by the [PTO's] general conclusions about what is “basic knowledge” or “common sense” to one of ordinary skill in the art. As described above, the [PTO] contended that even if the cited UNIX and FILER2 references did not disclose a trusted path, “it is basic knowledge that communication in trusted environments is performed over trusted paths” and, moreover, verifying the trusted command in UNIX over a trusted path is “nothing more than good common sense.” *Ex parte Zurko*, slip op. at 8. We cannot accept these findings by

the [PTO]. This assessment of basic knowledge and common sense was not based on any evidence in the record and, therefore, lacks substantial evidence support. As an administrative tribunal, the [PTO] clearly has expertise in the subject matter over which it exercises jurisdiction. This expertise may provide sufficient support for conclusions as to peripheral issues. With respect to core factual findings in a determination of patentability, however, the [PTO] cannot simply reach conclusions based on its own understanding or experience — or on its assessment of what would be basic knowledge or common sense. Rather, the [PTO] must point to some concrete evidence in the record in support of these findings. [Emphasis added.]

The even more recent Lee decision by the Federal Circuit Court of Appeals (In re Lee, 61 USPQ2d, 1430, 1435 (2002)) is noted to emphasize the need for the PTO to provide actual evidence on the record, not mere unsupported opinion, as follows:

In finding the relevant facts, in assessing the significance of the prior art, and in making the ultimate determination of the issue of obviousness, the examiner and the Board are presumed to act from this viewpoint [that of the person of ordinary skill in the art to which the subject matter pertains]. Thus when they rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record. [Emphasis added.]

The Lee court further specifically found it to be erroneous and arbitrary conduct for the PTO to attempt to resolve questions material to patentability by reliance upon “subjective belief and unknown authority” (see In re Lee at 61 USPQ2d 1434) as is being done here. Also note the Kotzab court admonition (at 55 USPQ2d 1317) that “[b]road conclusory statements are not evidence.”

Thus, in view of the above discussion, Applicants respectfully submit that Claim 9 (and Claims 10-15) patentably distinguish over Nakajima.

Claim 1 recites, inter alia, “each of the crystal grains of the mixed crystal has a crystallographic texture composed of a plurality of discrete regions dispersed in a matrix

thereof.” Thus, Applicants respectfully submit that Claim 1 (and Claims 2-5) patentably distinguish over Nakajima, for at least the reasons stated for Claim 9.

Moreover, dependent Claim 3 further patentably distinguishes over Nakajima. Claim 3 recites “wherein said X satisfies the relationship: $X \leq 0.1$.” This results in the amount of Ge being low. Due to the low amount of Ge, it is possible to obtain a crystallographic texture having an Si rich matrix and a plurality of Ge rich discrete regions dispersed in a matrix using a lower amount of Ge. Nakajima discloses $Si_{0.5}Ge_{0.5}$, and that the distribution of SiGe is non-uniform. However, Nakajima does not disclose or suggest what happens to the distribution of SiGe when the amounts of $Si_{0.9}Ge_{0.1}$ and $Si \geq 0.9Ge \leq 0.1$ occur. Thus, Applicants respectfully submit that it is impossible to conceive a crystallographic texture having an Si rich matrix and a plurality of Ge rich discrete regions dispersed in a matrix from merely the microscopic distribution of SiGe.

Claim 6 recites, inter alia, “each of the crystal grains of the mixed crystal has a crystallographic texture having a plurality of discrete regions dispersed in a matrix thereof.” Thus, Applicants respectfully submit that Claim 6 (and Claims 7-8) patentably distinguish over Nakajima, for at least the reasons stated for Claim 9.

With respect to the assertion in the outstanding Office Action that Nakajima inherently discloses the claimed limitation of $X_1 < X < X_2$, Applicants respectfully traverse this position. The Office Action provides no rationale for the finding of inherency beyond subjective opinion (see above). “The fact that a certain result may occur or be present in the prior art is not sufficient to establish inherency of that result or characteristic.”³ “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances

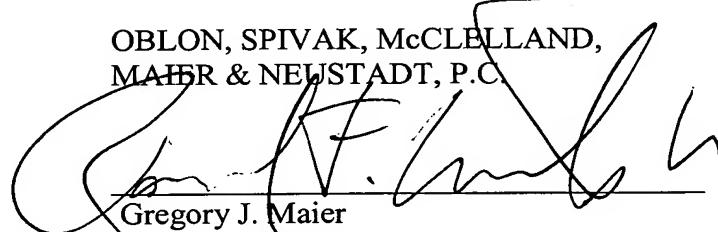
³ *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1995, 1957 (Fed. Cir. 1993).

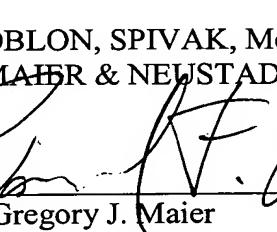
is not sufficient.”⁴ Because the Official Action provides no explanation of why Applicants’ claimed features are inherent, Applicants submit the rejection is improper.⁵

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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⁴ *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

⁵ MPEP § 2112, IV “Examiner must provide rationale or evidence tending to show inherency.”